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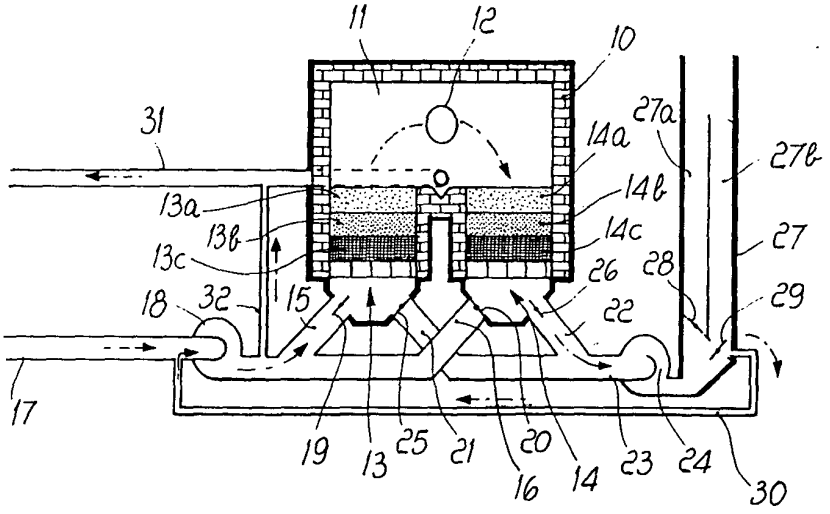
(54) Improved thermal disposal unit.

(57) A thermal disposal unit of the type which comprises a combustion chamber (11) which communicates with a plurality of thermal buffers (13, 14) each selectively connectable, at an opposite side thereof with respect to the combustion chamber (11), to a forced-flow duct (17) for conveying gases to be purified and to a gas emission duct (23) for conveying purified gases. Each thermal buffer (13, 14) is constituted by an accumulation mass (13a, 13b, 14a, 14b) for exchanging heat with the conveyed gases. Furthermore, the emission conduit (23) communicates with a flue divided into two chambers (27a, 27b) which are open to the atmosphere. One of the chambers (27b), which acts as a plenum chamber, is in constant communication with an aspiration zone of the duct (17) for conveying gases to be purified.



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After the third step, the situation described earlier reoccurs, with the only difference that the thermal buffers swap their functions.

The functions of the two parts into which the stack is divided remain unchanged, i.e. the chamber 27b still acts as plenum chamber, whereas the chamber 27a, discharges into the atmosphere the gases which are fully oxidized and contain no pollutants.

At this point the fact should be stressed that in the described thermal disposal unit there are only two thermal buffers, and that purging/flushing occurs in them with the gas flow directed from the combustion chamber outwards, i.e. in the same direction in which incineration is normally performed.

The thermal disposal unit thus effects a flushing process taken to the limit of incineration.

The emission of polluted gas produced by purging/flushing is confined in one of the two chambers into which the stack is divided, and said chamber is constantly connected to the negative-pressure branch upstream of the thermal disposal unit.

There is no risk of leakage into the atmosphere, since:

-- the volume of the chamber suitable for accumulating the flushing gas is oversized with respect to the amount to be stored;

-- the accumulation chamber of the stack is connected to the manifold which draws the gas to be purified, and is thus constantly subjected to a gas recycling action, thus preventing the escape of the gas from the free upper end of said chamber.

It should also be stressed that the differentiation of the filling mass has the advantage, with respect to known solutions, in addition to a lower overall cost of the material employed, of exploiting the most favorable combination of the product of specific heat and relative density of the iron, with consequent greater heat accumulation capacity.

Another advantage of the thermal disposal unit according to the present invention resides in that 100% of the heat required for the technological process is produced in the combustion chamber.

In practice it has been observed that the apparatus according to the present invention is much simpler and much less expensive than current ones, and it constitutes an environmental protection means. Therefore the aim and objects of the present invention have been achieved.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept.

All the details may furthermore be replaced with other technically equivalent elements.

In practice, the materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Improved thermal disposal unit of the type comprising a combustion chamber to which a plurality of thermal buffers are connected, each thermal buffer being constituted by an accumulation mass adapted for exchanging heat with flowing gas, each one of said thermal buffers being selectively connected, on the side opposite to the combustion chamber, to a forced-flow duct for gas to be purified and to a forced-flow duct for gas emission, said thermal disposal unit being characterized in that said emission duct is selectively connected to a chamber acting as a plenum chamber and constantly connected to the intake region of said duct for the gas to be purified.

2. Thermal disposal unit according to claim 1, characterized in that said chamber acting as a plenum chamber is open onto the atmosphere and is part of a stack which is divided into two selectable chambers, the other chamber being suitable to emit purified gas into the atmosphere.

3. Thermal disposal unit according to claim 1, characterized in that there are two of said thermal buffers.

4. Thermal disposal unit according to claim 1, characterized in that said accumulation mass is composed of layers of different material from the side of said combustion chamber to the opposite side.

5. Thermal disposal unit according to claim 4, characterized in that said layers comprise at least one first layer of sintered silica pellets, at least one second layer of pieces of ceramic material, and a plurality of layers of drawn iron net.

6. Thermal disposal unit according to one or more of the preceding claims, characterized in

that selection of the passages in said forced-flow ducts is performed by means of gates.

7. Thermal disposal unit according to one or more of the preceding claims, characterized in that said chambers of said stack are selected by means of gates.

8. Thermal disposal unit according to one or more of the preceding claims, characterized in that the flow of said ducts is forced by means of respective blowers.

9. Thermal disposal unit according to one or more of the preceding claims, characterized in that said combustion chamber is connected to the user by means of a hot gas conveyance duct.

10. Thermal disposal unit according to one or more of the preceding claims, characterized in that it comprises a duct for gas recycling between the delivery region of said duct for the gas to be purified and said duct for conveying hot gases to the user.

11. Thermal disposal unit according to one or more of the preceding claims, characterized in that the volume of said chamber which acts as a plenum chamber is oversized with respect to the amount of gas to be stored and is constantly subjected to a recall action from said duct for the gas to be purified.